[21] In one implementation illustrated in FIG. 5, the constant current source 117 comprises a field effect transistor (FET) 501 having a drain coupled to the input node 103 and a source coupled to ground. The gate of the field effect transistor is biased by a band gap circuit. The band gap circuit is configured to provides a suitable gate voltage (VGS) so that a constant current flows through the channel of the field effect transistor. In one arrangement, the field effect transistor operates in saturation mode and causes a saturation current IDSAT to pass through the channel of the field effect transistor from the input node 103 to ground. The saturation current IDSAT of a field effect transistor is proportional to the square of the potential difference between the gate and source. The bipolar junction transistor 119 also serves to fix voltage across the drain and source (VDS) to a constant value because the voltage at the emitter is VREF – VBE, where VREF is the reference voltage applied to the base of the bipolar junction transistor 119, and VBE is the threshold voltage across the base and the emitter of the bipolar junction transistor 119.

IN THE CLAIMS:

Please amend claims 1, 7, and 10-12 by way of replacement, and add new claims 13-18 as follows. All pending claims are set forth as follows, and a marked-up version of the amended claims is enclosed in the Appendix.

1. (Once Amended) A circuit for amplifying a signal from a sensor, comprising:

a current source; and

a differential amplifier having a first input coupled to the sensor and a second input coupled to the current source;

wherein the current source is configured to sink a current from the second input to ground.

2. (Not Amended) A circuit according to claim 1, further comprising:

a first feedback resistor coupled to the sensor and to a first output of the differential amplifier; and

a second feedback resistor coupled to the current source and to a second output of the differential amplifier.

3. (Not Amended) A circuit according to claim 2, wherein a gain of the circuit is approximately twice a sum of resistances of the first feedback resistor and the second feedback resistor.

4. (Once Amended) A circuit according to claim 1, wherein the current sunk by the current source is greater than a current produced by the sensor.

5. (Not Amended) A circuit according to claim 1, wherein the current source includes a field effect transistor coupled between the second input and ground and configured to operate in saturation mode.

6. (Not Amended) A circuit according to claim 5, further comprising a bipolar junction transistor having an emitter coupled to the second input and the current source.

7. (Once Amended) A circuit for amplifying a signal from a sensor, comprising:

a current source;

a differential amplifier having a first input coupled to the sensor and a second input coupled to the current source; and

a bipolar junction transistor having an emitter coupled to the second input and a base coupled to a reference voltage, whereby a voltage at the second input is fixed.

8. (Not Amended) A circuit according to claim 1, wherein the sensor comprises a photodiode.

9. (Not Amended) A circuit according to claim 1, further comprising a post-amplifier having inputs coupled to outputs of the differential amplifier.

10. (Once Amended) A method of amplifying a signal from a sensor, comprising:

receiving, at a first node, a current generated by the sensor;

sinking, from a second node to ground, a current greater than the current generated by the sensor; and

differentially amplifying the signal based on signals at the first node and the second node.

11. (Once Amended) An optical front-end, comprising:

a photodiode, responsive to light borne by an optical link;

a differential amplifier having a first input coupled to the photodiode and a second input coupled to a constant current source; and

a bipolar junction transistor having a collector coupled to a supply voltage and an emitter coupled to the second input.

12. (Once Amended) An optical front-end according to claim 11, wherein the constant current source includes a field effect transistor coupled between the second input and ground and configured to operate in saturation mode.

13. (New) An optical front-end according to claim 11, wherein the bipolar junction transistor is configured to fix a potential to the second input at a constant value.

14. (New) An optical front-end according to claim 11, further comprising:

a first feedback resistor coupled to the photodiode and to a first output of the differential amplifier; and

a second feedback resistor coupled to the constant current source and to a second output of the differential amplifier.

15. (New) An optical front-end according to claim 14, wherein a gain of the differential amplifier is approximately twice a sum of resistances of the first feedback resistor and the second feedback resistor.

16. (New) An optical front-end according to claim 11, wherein the current sunk by the constant current source is greater than a current produced by the sensor.

17. (New) A method according to claim 10, further comprising:

providing a first feedback resistance between the first node and a first output of said differential amplifying; and

providing a second feedback resistance between the second node and a second output of the differential amplifying.

18. (New) A method according to claim 17, wherein a gain of said differential amplifying is approximately twice a sum of the first feedback resistance and the second feedback resistance.